$\qquad$

## Complete \#1-3 without a calculator



Transformation(s): $\qquad$

Write the explicit and recursive rules and find the $12^{\text {th }}$ term in the given sequence:
4. $3,12,48, \ldots \ldots$.
5. $2187,729,243, \ldots \ldots$
6. Your company purchased a new machine this year for $\$ 146,000$. The machine loses $21 \%$ of its value every year.
a) Write a model for this situation:
b) How much is the machine worth in 4 years?
c) How long does it take before the machine is worth $\$ 12,000$ ? Round to 2 decimal places.
7. You put $\$ 6400$ in a bank at $4.1 \%$ interest for 12 years. How much do you have at the end if the bank compounds the interest: (show your work!!)
a) Quarterly:
b) Monthly:
c) Continuously:
8. Write an exponential decay function that has been vertically stretched by 5 , moved to the right 7 and down 12.

Give the characteristics for the given exponential:
9. $f(x)=-2^{x}+3$

Asymptote: $\qquad$ Range: $\qquad$

3 points on graph: $\qquad$
y-intercept: $\qquad$ Rate of change $[0,2]$ $\qquad$

Increasing: $\qquad$ Decreasing: $\qquad$


End Behavior: $\mathrm{x} \rightarrow$ $\qquad$ $f(x) \rightarrow$ $\qquad$ $\& x \rightarrow$ $\qquad$ ,$f(x) \rightarrow$ $\qquad$
10. Describe all of the following for the given exponential functions:

|  | $f(x)=4^{x+2}$ | $f(x)=\left(\frac{1}{5}\right)^{x}+3$ |
| :---: | :--- | :--- |
| Growth or Decay? |  |  |
| Transformation? |  |  |
| Range? |  |  |
| Asymptote? |  |  |
| Increasing or Decreasing? |  |  |
| y-intercept? |  |  |
| Does this function have an |  |  |
| x-intercept? |  |  |
| $x \rightarrow-\infty, f(x) \rightarrow$ |  |  |

## Additional Topics:

- Even vs. Odd - Graphically and Algebraically
- Intersections of functions - especially quadratics
- Writing linear, exponential, and quadratic equations given graphs or tables

